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ABSTRACT

A study was conducted to investigate the reading comprehension and educationally related characteristics and relationships that describe the Navy's recruit population. The variable of primary interest was the recruit's reading comprehension grade level score; other variables were years of education, aptitude score, high school graduation status, and month of entry into the Navy. Nearly 80,000 recruits (who entered the service between June 1987 and May 1988) took the Gates-MacGinitie Reading Comprehension Test and the Armed Services Vocational Aptitude Battery. Data analyses of their scores revealed that the typical Navy recruit completed slightly less than 12 years of education, with reading comprehension for the composite group near the 10th grade level (with the median for the year near the 12th grade level). Findings suggested that the recruit population remains relatively stable, showing only slight variability with regard to years of education, reading comprehension skills, and aptitude scores. However, from month to month the recruits vary on reading scores, graduation status, and the number who read below grade six. (Eight tables of data are included and 23 references are attached.) (MM)

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READING COMPREHENSION AND EDUCATIONALLY RELATED CHARACTERISTICS OF U.S. NAVY RECRUITS: A TWELVE-MONTH PROFILE FROM JUNE, 1987, TO MAY, 1988

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Introduction

The Department of the Navy initiated programs designed to remediate deficiencies in academic skills among selected personnel as early as the World War II era in the 1940s. The first official policy on remedial training in basic skills was issued by the Secretary of the Navy on 2 June 1978 that included the following statement: "It is the policy of the Department of the Navy to provide, when indicated, on-duty remedial job-relevant basic skills training in order to fill personnel requirements" (SECNAVINST 1510.3, 1978, p. 1). [Job-relevant basic skills are defined as "those capabilities prerequisite to efficient completion of Navy training programs, adequate job performance and career advancement. Notable among these are literacy, study and computational skills" (p. 1).] In addition to new programs being developed as a result of the policy statement, fundamental skills training programs that were already operational were given formally recognized status by the Department of the Navy. One operational program, Academic Remedial Training (ART), provides instruction for recruits in basic reading and study skills as well as verbal skills needed to complete the demanding academic requirements of recruit training.

The ART Program was initiated officially in 1967 by the Naval Technical Training Command at each of the Navy's three Recruit Training Centers as a remedial reading course. The courses at the three sites utilized different curricula and testing plans due to the autonomy permitted in course development. Eventually, the Chief of Naval Technical Training recognized a need for a standardized curriculum and testing plan that were prescribed and implemented in 1978 (CNTECHTRAINST 1540.42). The scope of the curriculum included both reading and study skills (Chief of Naval Technical Training, 1978; Chief of Naval Technical Training, 1979; Bowman, Kaiser, Jones, & Petry,

1984). A verbal skills curriculum that focuses on listening and speaking skills, primarily for recruits whose native language is not English, was added to the program at the Orlando and San Diego Recruit Training Centers in 1981 and the Great Lakes Recruit Training Center in 1985 (Chief of Naval Technical Training, 1980; Bowman, Kaiser, & Sherman, 1986).

The commitment of the Navy to provide fundamental skills training for enlisted personnel was reiterated through a policy statement by the Chief of Naval Operations in 1982. Specific skills identified for remediation were reading, mathematics, and communication skills (OPNAVINST 1510.11, 1982, p. 1). The policy states also that "A major goal of enlisted fundamental skills training is to achieve a minimum reading competency of the ninth grade" (p. 1).

Historically, the singular purpose of ART has been to assist recruits in acquiring the language skills required to complete recruit training successfully. While the ultimate purpose remains the same, the addition of the verbal skills component to the program expanded the scope of remediation to include listening and speaking skills of recruits who are primarily speakers of English as a second language. The population served by the program has been delimited to enlisted personnel who have not begun recruit training or have encountered academic difficulty after beginning recruit training.

The implementation of the standardized ART reading curriculum required the use of a Computer-Managed Instruction (CMI) system to perform test scoring functions. The CMI system is utilized to score the screening, diagnostic, and criterion tests employed in the program. A product of using the CMI system for test scoring is a database on the reading comprehension skill levels and educationally related characteristics of all Navy recruits. Monthly reports on the educational, aptitudinal, and reading characteristics of all recruits who begin training are routinely prepared and distributed to ART Program management

personnel.

Problem

The problem defined for this study was to investigate the reading comprehension and educationally related characteristics and relationships among selected variables that describe the Navy's recruit population. The recruits who entered the Navy between June, 1987, and May, 1988, were the subjects who provided the data to address the problem. The variable of primary interest was the recruit's grade level score on reading comprehension. Other variables employed in the study were years of education, aptitude score, high school graduation status, and month of entry into the Navy.

Hypotheses

After performing descriptive analyses of the data on selected variables, six null hypotheses were tested statistically to identify differences among recruits on particular variables. The hypotheses tested were the following:

1. There are no differences in the distributions of recruits classified by reading grade level (RGL) category and month of entry into the Navy.
2. There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy.
3. There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy.
4. There is no difference in the distributions of non-high school graduate recruits classifed by the 6.0 RGL criterion and month of entry into the Navy.
5. There is no difference in the distributions of recruits scoring below

the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy.

6. There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion.

The .05 level of significance was used in testing the hypotheses.

The importance of the study is based on two considerations. First, the analyses could identify factors on which the recruit population varies across a 12-month period. Such information would be useful to ART Program management personnel in planning for more efficient allocation and utilization of resources (e.g. staff, facilities, and instructional materials). In particular, variablity in the numbers of recruits who need remediation in language skills would have a direct effect on the requirements for staffing and instructional materials. Second, this study could demonstrate the feasibility of using CMI system data to monitor and manage the ART Program. Since these data are reported routinely to program management personnel, the data are readily available to use in making decisions on program needs and operations.

Related Research

Many research studies have been conducted on the reading skill levels of Navy enlisted personnel and training materials because of the importance of reading skills for success in training and job performance. Hoiberg, Hysham, and Berry (1974) reported a significant relationship between reading skills and successful completion of the first enlistment term in the Navy. Biersner (1975) found that many Navy training manuals are written at the 12th grade reading ability level or higher. Zierdt (1976) and Sticht (1982) concluded that the reading abilities of many recruits do not meet the skill requirements of widely used Navy materials.

Several studies have described the reading skill levels of the Navy recruit population based on the Gates-MacGinitie Reading Tests. Duffy and Nugent (1978) found a median RGL of 11.9 on comprehension as a result of testing 31,575 recruits at the Recruit Training Center in San Diego between May, 1974, and May, 1975. The data showed that 2.8% of the recruits scored below the 4.0 RGL and 9.6% scored below the 6.0 RGL. They concluded that the reading skill levels of many recruits are well below the readability levels of the print materials used in recruit training and daily job tasks.

Bowman and Kerr (1979) reported that a sample of 14,503 recruits tested in the first few months of 1979 had a median RGL of 11.0 on comprehension while 1.1% scored below the 4.0 RGL and 5.2% scored below the 6.0 RGL. In a one-year study (1981), they found that 79,350 recruits who entered the Navy between June, 1980, and May, 1981, had a median RGL of 11.0 on comprehension with .7% scoring below the 4.0 RGL and 4.3% scoring below the 6.0 RGL. In a subsequent study (1982) based on 84,123 recruits who entered the Navy between June, 1981, and May, 1982, they reported a median RGL of 11.2 while .5% scored below the 4.0 RGL and 3.6% scored below the 6.0 RGL. They found in a more recent study (1983) on 77,347 recruits who entered the Navy between June, 1982, and May, 1983, that the median RGL was 11.4 with .9% scoring below the 4.0 RGL and 3.8% scoring below the 6.0 RGL. Kerr, Bowman, and Darcy (1984) indicated in a study on 67,740 recruits who entered the Navy between June, 1983, and May, 1984, that the median RGL was 12.1 with .7% scoring below the 4.0 RGL and 2.9% scoring below the 6.0 RGL. In a later study by Bowman and Kerr (1985), the data on 77,674 recruits who entered the Navy between June, 1984, and May, 1985, revealed a median RGL of 12.0 with .7% of the recruits scoring below the 4.0 RGL and 3.0% scoring below the 6.0 RGL. Bowman, Kerr, and Webb (1986) reported more recently on a study of 82,531 recruits who entered the Navy between June,

1985, and May, 1986, that the median RGL was 11.9 with .7% of the recruits scoring below the 4.0 RGL and 2.8 % scoring below the 6.0 RGL. The latest study by Bowman and Webb (1987) of 79,087 recruits who entered the Navy between June, 1986, and May, 1987, revealed a median RGL of 12.0 with 3.5% scoring below the 6.0 RGL.

The research studies indicate that reading skills are strongly related to the success of Navy enlisted personnel while the readability levels of many training and job materials are very demanding with respect to the skill levels required for their use. Descriptive research data reveal that the reading comprehension levels of recruits declined between 1974-75 and 1979. Later studies suggest that the median reading comprehension level of recruits has increased after a brief period of stability at approximately the 11th grade level.

Procedures

The data utilized in this study were obtained from the monthly CMI reports on Navy recruit characteristics and test performance. Data were available on 76,177 recruits who entered the Navy between June, 1987, and May, 1988. The reports provided data on four variables used in this study: years of education, high school graduation status, aptitude test scores, and reading comprehension grade level scores. A fifth variable, month of entry into the Navy, was defined by the month for which each report was prepared.

The Gates-MacGinitie Reading Comprehension Test (1978), hereafter called the Gates, and the Armed Services Vocational Aptitude Battery (1967-84) are the two tests for which data were reported. The Gates, Levels D, E, or F, is utilized as a screening test for all recruits who enter the Navy. An algorithm is used with the paragraph comprehension and verbal expression scores for the Armed Services Vocational Aptitude Battery to estimate the reading

skill level of each recruit and to assign the appropriate level of the Gates. During the time period covered by this study, the recruits who scored below the 8.0 RGL on the first administration of the Gates were retested with an alternate form of Level D. (The data from the first administration of the Gates are used in this study.) All recruits who scored below the 6.0 RGL on the second administration of the Gates were assigned to ART. (Recruits may also be assigned to ART if they score between the 6.0 and 8.0 RGL or encounter academic difficulties during recruit training.)

The Armed Services Vocational Aptitude Battery (ASVAB) is administered to all recruits before they enlist in the Navy. The recruits included in this study had taken one of two series of ASVAB tests: Series 8-10 or Series 11-14. The aptitude score used in the study was the Armed Forces Qualification Test (AFQT) score. The AFQT is a normative percentile score that is derived from a composite of selected ASVAB scores.

The monthly CMI reports provided means for years of education, AFQT scores of recruits classified by the 6.0 RGL criterion (above or below), and RGL scores. The median was calculated for RGL scores by month. Frequency distributions were compiled and percentage distributions were computed for all recruits on RGL categories, high school graduation status, and combinations of the variables on high school graduation status and the 6.0 RGL criterion. Proportions were calculated for high school graduate and non-high school graduate recruits who scored below the 6.0 RGL criterion.

A tabular format was used to present the means and medians as descriptive statistics. The Chi-square technique and confidence limits for differences in proportions were employed for the analyses related to testing the hypotheses. The Chi-square procedure provided comparisons of frequency distributions for RGL scores, high school graduation status, and the 6.0 RGL criterion and high

school graduation status by month of entry into the Navy. Confidence interval limits were computed to compare the proportions of high school graduates and non-high school graduates who scored below the 6.0 RGL by month and composite group.

Results

The results of the study are reported in a series of nine tables. The descriptive data are depicted in the first three tables. The remainder of the tables present the data and results of the inferential analyses related to the hypotheses.

Descriptive Data

Table 1 contains the means on years of education by month of entry into the Navy for the recruits. The composite mean for the one-year time period was 11.9 years of education. The monthly means varied by only two months from 11.8 to 12.0 years. Means of 12.0 years occurred for three months--August, 1987; November, 1987; and January, 1988.

The means presented in Table 2 are derived from the AFQT percentile scores of recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The composite means were 38.5 for all recruits who scored below the 6.0 RGL and 59.7 for all recruits who scored above the 6.0 RGL. Among the recruits with RGL scores below 6.0, the monthly means ranged from 36.0 in September, 1987, to 40.9 in December, 1987. Among the recruits with RGL scores above 6.0, the monthly means varied from a low of 57.8 in September, 1987, to a high of 64.0 in May, 1987. The differences in the means for the low and high RGL groups were about 21 percentile points for the composite means and ranged from about 18 to 25 points by month. The differences between the low and high RGL groups were relatively stable during the 12-month period.

TABLE 1

MEANS ON YEARS OF EDUCATION FOR RECRUITS BY MONTH OF ENTRY

Month	N	Mean
June, 1987	7,256	11.9
July, 1987	9,377	11.9
August, 1987	8,792	12.0
September, 1987	8,970	11.9
October, 1987	6,208	11.9
November, 1987	6,456	12.0
December, 1987	4,441	11.9
January, 1988	5,086	12.0
February, 1988	5,068	11.9
March, 1988	5,132	11.8
April, 1988	4,621	11.9
May, 1988	4,770	11.9
TOTAL	76,177	11.9

TABLE 2

MEANS ON THE ARMED FORCES QUALIFICATION TEST SCORES FOR RECRUITS BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

Month	Reading Grade Level Criterion			
	Below 6.0		Above 6.0	
	N	Mean	N	Mean
June, 1987	275	40.5	6,981	60.3
July, 1987	319	40.1	9,058	58.5
August, 1987	398	37.9	8,394	57.9
September, 1987	356	36.0	8,614	57.8
October, 1987	231	37.5	5,977	57.9
November, 1987	239	38.6	6,217	60.6
December, 1987	136	40.9	4,305	64.0
January, 1988	143	37.1	4,943	62.5
February, 1988	150	36.3	4,918	61.0
March, 1988	179	40.5	4,953	60.4
April, 1988	181	40.3	4,440	60.2
May, 1988	207	37.5	4,563	60.2
TOTAL	2,814	38.5	73,363	59.7

The medians and means for RGL of recruits by month of entry into the Navy are reported in Table 3. The median for the composite group was 11.9 RGL while the mean was 9.8 RGL. The monthly medians ranged from 11.4 RGL in August, 1987, to 12.7 RGL in December, 1987. The means by month varied from a low of 9.6 RGL in May, 1988, to a high of 9.9 RGL in December, 1987 - February, 1988. The monthly medians and means did not reveal appreciable variability during the one-year time period.

Hypothesis 1

There are no differences in the distributions of recruits classified by RGL category and month of entry into the Navy. Table 4 presents the frequency and percentage distributions of recruits by RGL category and month of entry. The data on the composite group for the one-year period showed that 3.69% of the recruits had scores below the 6.0 RGL criterion--the criterion for mandatory referral to ART during this time period. The percentage of recruits who scored below the 6.0 RGL varied considerably among the 12 months as evidenced by a range from 2.81% in January, 1988, to 4.53% in August, 1987. The percentage of recruits who scored at or below the 8.0 RGL was 15.10% for the year with a monthly low of 12.02% in December, 1987, and a monthly high of 17.45% in August, 1987. While 84.89% of the composite group had RGL scores above 8.0, the monthly percentages ranged from 82.55% in August, 1987, to 87.98% in September, 1986. The Chi-square comparison of the RGL distributions of recruits by month of entry revealed significant differences across the 12 months, thereby leading to rejection of the null hypothesis tested at the .05 level of significance.

Hypothesis 2

There is no difference in the distributions of recruits classified by high

TABLE 3

MEDIANS AND MEANS ON READING GRADE LEVEL FOR RECRUITS
BY MONTH OF ENTRY

Month	N	Median	Mean
June, 1987	7,256	11.9	9.8
July, 1987	9,377	11.5	9.8
August, 1987	8,792	11.4	9.7
September, 1987	8,970	11.5	9.7
October, 1987	6,208	11.6	9.7
November, 1987	6,456	12.0	9.8
December, 1987	4,441	12.7	9.9
January, 1988	5,086	12.1	9.9
February, 1988	5,068	12.0	9.9
March, 1988	5,132	11.9	9.8
April, 1988	4,621	11.9	9.7
May, 1988	4,770	11.9	9.6
TOTAL	76,177	11.9	9.8

TABLE 4

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY READING GRADE LEVEL AND MONTH OF ENTRY

Month	Reading Grade Level Category						
	6.0 or below		6.1-8.0		Above 8.0		Total
	f	%	f	%	f	%	f
June, 1987	275	3.79	804	11.08	6,177	85.13	7,256
July, 1987	319	3.40	1,128	12.03	7,930	84.57	9,377
August, 1987	398	4.53	1,136	12.92	7,258	82.55	8,792
September, 1987	356	3.97	959	10.69	7,655	85.34	8,970
October, 1987	231	3.72	748	12.05	5,229	84.23	6,208
November, 1987	239	3.70	733	11.35	5,484	84.94	6,456
December, 1987	136	3.06	398	8.96	3,907	87.98	4,441
January, 1988	143	2.81	532	10.46	4,411	86.73	5,086
February, 1988	150	2.96	549	10.83	4,369	86.21	5,068
March, 1988	179	3.49	554	10.80	4,399	85.72	5,132
April, 1988	181	3.92	555	12.01	3,885	84.07	4,621
May, 1988	207	4.34	598	12.54	3,965	83.12	4,770
TOTAL	2,814	3.69	8,694	11.41	64,669	84.89	76,177

Chi-square = 132.143 (Chi-square = 33.924, df = 22, level of significance = .05)

school graduation status and month of entry into the Navy. The frequency and percentage distributions of recruits classified by high school graduation status are reported in Table 5. The data revealed that about 91% of the recruits were high school graduates. The percentages of high school graduates were relatively higher during July - October, 1987. The lowest percentage was in April, 1988. The comparison of the frequency distributions of recruits on high school graduation status by month of entry utilizing the Chi-square procedure indicated that the distributions differed very significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 3

There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. Table 6 contains the frequency and percentage distributions of high school graduate recruits by the 6.0 RGL criterion and month of entry. The data for the composite group indicated that 3.81% of the high school graduate recruits scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of 3.02% in January, 1988, to a high of 4.72% in May, 1988. Higher percentages tended to occur in the earlier and latter months for the 12-month period. The results of the Chi-square comparison of the frequency distributions for high school graduate recruits by the 6.0 RGL criterion and month of entry showed that they differed significantly at the .05 level of significance. Consequently, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 4

There is no difference in the distributions of non-high school graduate

TABLE 5

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				
	Yes		No		Total
Month	f	%	f	%	f
June, 1987	6,588	90.81	667	9.19	7,255
July, 1987	8,900	94.92	476	5.08	9,376
August, 1987	8,372	95.24	418	4.76	8,790
September, 1987	8,466	94.42	500	5.58	8,966
October, 1987	5,715	92.06	493	7.94	6,208
November, 1987	5,883	91.11	572	8.86	6,455
December, 1987	3,938	88.67	503	11.33	4,441
January, 1988	4,566	89.78	520	10.22	5,086
February, 1988	4,436	87.53	632	12.47	5,068
March, 1988	4,425	86.22	707	13.78	5,132
April, 1988	3,929	85.02	692	14.98	4,621
May, 1988	4,152	87.04	618	12.96	4,770
TOTAL	69,370	91.07	6,798	8.93	76,168

Chi-square = 1,063.134 (Chi-square = 19.68, df = 11, level of significance = .05)

TABLE 6

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF HIGH SCHOOL GRADUATE RECRUITS BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

	Reading Grade Level Criterion				
	Below 6.0		Above 6.0		Total
Month	f	%	f	%	f
June, 1987	258	3.92	6,330	96.08	6,588
July, 1987	308	3.46	8,592	96.54	8,900
August, 1987	387	4.62	7,985	95.38	8,372
September, 1987	341	4.03	8,125	95.97	8,466
October, 1987	221	3.87	5,494	96.13	5,715
November, 1987	213	3.62	5,670	96.38	5,883
December, 1987	122	3.10	3,816	96.90	3,938
January, 1988	138	3.02	4,428	96.98	4,566
February, 1988	141	3.18	4,295	96.82	4,436
March, 1988	154	3.48	4,271	96.52	4,425
April, 1988	163	4.15	3,766	95.85	3,929
May, 1988	196	4.72	3,956	95.28	4,152
TOTAL	2,642	3.81	66,728	96.19	69,370

Chi-square = 96.953 (Chi-square = 19.68, df = 11, level of significance = .05)

recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The frequency and percentage distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry are depicted in Table 7. In the composite group, 2.53% of the recruits who were not high school graduates scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of .96% in January, 1988, to a high of 4.55% in November, 1987. The percentages were highly variable among the 12 months without any clearly discernible pattern. The Chi-square comparison of the frequency distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry revealed that they differed significantly at the .05 level of signficance. Thus, the null hypothesis that the distributions are not different was rejected.

Hypothesis 5

There is no difference in the distributions of recruits scoring below the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions are reported in Table 8 for the recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry. The data showed that 93.89% of the recruits who obtained scores below the 6.0 RGL on comprehension were high school graduates. The monthly percentages ranged from 86.03% in March, 1987, to 97.24% in August, 1987. The percentages tended to be higher in the earlier months and variably higher and lower in the latter months of the 12-month period. The comparison of the frequency distributions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry using the Chi-square technique revealed that they differed significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

TABLE 7

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF NON-HIGH SCHOOL GRADUATE RECRUITS BY SIXTH GRADE LEVEL CRITERION AND MONTH OF ENTRY

	Reading Grade Level Criterion				
	Below 6.0		Above 6.0		Total
Month	f	%	f	%	f
June, 1987	17	2.55	650	97.45	667
July, 1987	11	2.31	465	97.69	476
August, 1987	11	2.63	407	97.37	418
September, 1987	15	3.00	485	97.00	500
October, 1987	10	2.03	483	97.97	493
November, 1987	26	4.55	546	95.45	572
December, 1987	14	2.78	489	97.22	503
January, 1988	5	.96	515	99.04	520
February, 1988	9	1.42	623	98.58	632
March, 1988	25	3.54	682	96.46	707
April, 1988	18	2.60	674	97.40	692
May, 1988	11	1.78	607	98.22	618
TOTAL	172	2.53	6,626	97.47	6,798

Chi-square = 23.127 (Chi-square = 19.68, df = 11, level of significance = .05)

TABLE 8

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				
	Yes		No		Total
Month	f	%	f	%	f
June, 1987	258	93.82	17	6.18	275
July, 1987	308	96.55	11	3.45	319
August, 1987	387	97.24	11	2.76	398
September, 1987	341	95.79	15	4.21	356
October, 1987	221	95.67	10	4.33	231
November, 1987	213	89.12	26	10.88	239
December, 1987	122	89.71	14	10.29	136
January, 1988	138	96.50	5	3.50	143
February, 1988	141	94.00	9	6.00	150
March, 1988	154	86.03	25	13.97	179
April, 1988	163	90.06	18	9.94	181
May, 1988	196	94.69	11	5.31	207
TOTAL	2,642	93.89	172	6.11	2,814

Chi-square = 51.448 (Chi-square = 19.68, df = 11, level of significance = .05)

Hypothesis 6

There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion. Table 9 presents data on the proportions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry into the Navy. The data on the proportions of recruits who scored below the 6.0 RGL are discussed above as percentages for high school graduates and non-high school graduates separately. (See Tables 6 and 7.) An inspection of the relative proportions of the two groups revealed that a somewhat higher proportion (.0128) of the high school graduates than non-high school graduates obtained scores below the 6.0 RGL criterion for the one-year period. In 10 of the 12 months (except for November, 1987, and March, 1988), the high school graduates had the higher proportion. The confidence limits for the comparison of the difference in the proportions for the composite groups revealed that the overall proportions differ significantly at the .05 level of significance because the limits do not include 0 within the range. The differences were also significant for 7 of the 12 months. In the seven months where significant diffferences were observed, the proportions were higher for the high school graduates than the corresponding proportions for the non-high school graduates. The results of comparing the proportions for the two composite groups required rejection of the null hypothesis of no difference in the proportions at the .05 level of significance.

Conclusions

The Navy's recruit population is described in this study based on data for selected variables that apply to the recruits entering the Navy during a 12-month time period. The conclusions are derived from the descriptive analyses and the results of testing six hypotheses about specific variables.

TABLE 9

COMPARISON OF PROPORTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				Confidence Limits
	Yes		No		.025 to .975
Month	N	p	N	p	
June, 1987	6,588	.0392	667	.0255	.0008 to .0266
July, 1987	8,900	.0346	476	.0231	-.0025 to .0255
August, 1987	8,372	.0462	418	.0263	.0040 to .0258
September, 1987	8,466	.0403	500	.0300	-.0052 to .0258
October, 1987	5,715	.0387	493	.0203	.0051 to .0317
November, 1987	5,883	.0362	572	.0455	.0271 to -.0085
December, 1987	3,938	.0310	503	.0278	-.0122 to .0186
January, 1988	4,566	.0302	520	.0096	.0109 to .0303
February, 1988	4,436	.0318	632	.0142	.0070 to .0282
March, 1988	4,425	.0348	707	.0354	-.0152 to .0140
April, 1988	3,929	.0415	692	.0260	.0021 to .0289
May, 1988	4,152	.0472	618	.0178	.0171 to .0417
TOTAL	69,370	.0381	6,798	.0253	.0089 to .0167

With regard to years of education, the typical Navy recruit has completed slightly less than 12 years of education. Nine tenths of the recruits are high school graduates. The inferential analysis on high school graduation status indicates that higher percentages of high school graduates are included among the recruits during some months than other months during the year.

The aptitude of recruits as reflected by means on the AFQT does not appear to vary in any consistent pattern among the recruits with RGL scores below 6.0 or the recruits with RGL scores above 6.0. The means indicate that recruits who score above the 6.0 criterion have greater aptitude than recruits who score below the 6.0 RGL criterion. The difference in the aptitude score means for the two groups suggests that they are dissimilar populations.

The reading comprehension means of recruits exhibit relative stability across the 12-month period, placing the composite group near the 10th grade level. The median for the year places the group near the 12th grade level. The median for the composite group shows a discontinuation of a previous trend toward higher comprehension levels among recruits as reported for four earlier 12-month periods (Bowman & Kerr, 1981; Bowman & Kerr, 1982; Bowman & Kerr, 1983; Kerr, Bowman, & Darcy, 1984) and possibly stablization as shown for the three immediately preceding 12-month periods (Bowman & Kerr, 1985; Bowman, Kerr, & Webb, 1986; Bowman & Webb, 1987).

The frequency distributions of recruits by RGL categories reveal differences in the composition of the recruit groups when considered by month of entry into the Navy. Separate analyses of the distributions of high school graduate and non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry indicate that differences also exist across the 12-month period for both groups. Higher percentages of recruits in neither group tend to score below the 6.0 RGL in any particular consecutive months of

the period.

Differences exist in the 12-month distributions of recruits who obtain RGL scores below 6.0 when classified by high school graduation status and month of entry in the Navy. Higher percentages of the recruits who score below the 6.0 RGL are high school graduates in the earlier months of the period. A higher proportion of the composite group of high school graduate recruits score below the 6.0 RGL than is found in the composite group of non-high school graduate recruits.

The findings suggest that the recruit population remains relatively stable, showing little variability during recent years with regard to means on years of education, reading comprehension skills, and aptitude scores. Several variables reveal variability across the 12-month period. Factors for which distributions by month differ include RGL scores, high school graduation status, high school graduate and non-high school graduate recruits who score above and below the 6.0 RGL criterion, and high school graduation status of recruits who score below the 6.0 RGL.

This study indicates that the recruits who enter the Navy are likley to vary in different months of the year on some important factors. As a result, ART management personnel need to be prepared for increases and decreases in resource requirements as the recruit population changes throughout the year. By being aware of the variability in demands, more efficient allocation and utilization of the resources can be achieved for ART and the Recruit Training Centers. The study also demonstrates that information is available through the monthly CMI reports on Navy recruit characteristics to improve the effectiveness of program management. Consistent monitoring of these reports and basic analyses of the data would enable the staff to determine the changes occuring in the composition of the recruit population that affect the ART Program.

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